

Production of bacterial endoglucanase from pretreated oil palm empty fruit bunch by bacillus pumilus EB3

ABSTRACT

In this study, endoglucanase was produced from oil palm empty fruit bunch (OPEFB) by a locally isolated aerobic bacterium, *Bacillus pumilus* EB3. The effects of the fermentation parameters such as initial pH, temperature, and nitrogen source on the endoglucanase production were studied using carboxymethyl cellulose (CMC) as the carbon source. Endoglucanase from *B. pumilus* EB3 was maximally secreted at 37°C, initial pH 7.0 with 10 g/l of CMC as carbon source, and 2 g/l of yeast extract as organic nitrogen source. The activity recorded during the fermentation was 0.076 U/ml. The productivity of the enzyme increased twofold when 2 g/l of yeast extract was used as the organic nitrogen supplement as compared to the non-supplemented medium. An interesting finding from this study is that pretreated OPEFB medium showed comparable results to CMC medium in terms of enzyme production with an activity of 0.063 U/ml. As OPEFB is an abundant solid waste at palm oil mills, it has the potential of acting as a substrate in cellulase production.

Keyword: endoglucanase, bacterial cellulase, *Bacillus pumilus*, oil palm empty fruit bunch